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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/564,877

05/15/2006

Claude Dehennau

05129-00118-US

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EXAMINER

MCNALLY, DANIEL

ART UNIT

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/564,877	<b>Applicant(s)</b> DEHENNAU ET AL.	
	<b>Examiner</b> DANIEL MCNALLY	<b>Art Unit</b> 1791	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 5/15/2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 9-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 9-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>1/17/2006</u> .   | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 102/103***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 9 and 12 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Rinkewich [US5047193].

Rinkewich discloses a method of joining a honeycomb core to facing layers on either side of the core. As show in Figure 1, a core element (3) is continuously produced, extruded plastic facing layers (211) are produced on either side of the core element, heating means (220a, 220b) such as a laser radiate energy onto the assembly to heat the inner surfaces of the facing layers and to the ends of the ribs of the core element, the heated portions melt and fuse together. Rinkewich discloses the material of the core element and the facing layers are thermoplastic or thermosetting. From Figure 1 it appears the laser would have to pass though the outside of the facing layers to heat the inner surfaces of the facing layers, so the facing layers would have to be laser transparent and the inner surfaces would need to comprise a laser absorbent

material so that the inner surface of the facing layers could be heated. In any event one of ordinary skill in the art would have readily appreciated forming thermoplastic components of laser transparent materials so that the laser energy could reach the desired bonding area without losing energy in areas of the components that one does not desire to heat.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 9, 10 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fell [US5316604] in view of Grosser et al. [US2003/0132554] and optionally in view of Rinkewich [US5047193].

Fell discloses a method of making a sandwich structure. The method comprises continuously providing a honeycomb core, providing facing sheets on either side of the core so that the core cell edges contact the facing sheets, wherein the honeycomb core and the facing sheets comprises a plastic material such as polypropylene, a non-contacting heating means heats the core cell edges and the inner surfaces of the facing sheets, the heating means may also heat a bonding film if it is present between the facing sheets and core, the heated surfaces are heated to their fusion temperature, pressed together and allowed to cool so that a weld is formed (column 3, lines 15-27; column 3, line 53—column 4, line 67). Fell discloses using a non-contacting heating

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means and provides the example of an infrared radiation source but is silent toward using a laser source.

Grosser discloses a method of joining plastic parts. The method comprises providing two or more plastic components, wherein one of the components comprises a sealing lip, the components and the sealing lip comprise polypropylene which is the same material used by Fell, directing laser beam is through one of the components which is transparent to laser energy toward a contacting portion between the components, the laser reaches the sealing lip located at the contacting portion, the sealing lip comprises laser absorbent materials, the laser heats the contacting portion, the plastic components are pressed together until a weld is formed between the components.

Rinkewich discloses a method of joining a honeycomb core to facing layers on either side of the core. Applicant is referred to paragraph 3 for a detailed discussion of Rinkewich. Rinkewich teaches it was known to use lasers to heat contacting surfaces of a honeycomb assembly.

It would have been obvious to one of ordinary skill in the art at the time of invention to choose laser energy as the non-contacting heating energy of Fell as taught by Grosser in order to precisely heat the desired welding areas without wasting energy heating the entirety of the components. Rinkewich optionally provides support for using laser energy to heat components of a honeycomb assembly.

With regard to claim 10, Fell and Grosser disclose using polypropylene.

With regard to claim 12, Fell and Rinkewich disclose continuously providing the core material and performing the welding of the skins inline with the manufacturing process.

6. Claims 11, 12, 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fell, Grosser, optionally Rinkewich, and further in view of Pflug [WO00/32382] and Savitski et al. [US6596122].

Fell discloses a method of making a sandwich structure. Applicant is referred to paragraph 5 for a detailed discussion of Fell as modified. Fell does not disclose producing the core by thermofolding of a plastic sheet. While Grosser teaches applying a laser absorbent material in the contacting joint area between the components, the combination of Grosser and Fell do not explicitly disclose placing the absorbent materials at the claimed locations of claims 11, 14 and 15.

Pflug discloses a method of making a honeycomb structure. Pflug teaches a well known method of forming honeycomb cores by providing a thermoplastic sheet, thermoforming the sheet, and folding the sheet to form the honeycomb core.

Savitski discloses a method of welding plastic parts. Savitski discloses it is known to use electromagnetic radiation, such as infrared or laser, to weld plastic components by transmitting the laser through one of the plastic components to the contacting area between the components to be joined, so that the contacting area between the components is heated and a weld is formed at the exposed contacting area. Savitski discloses forming the plastic components of a laser transparent material and using a laser absorbent material to heat desired locations. Savitski discloses there

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is a wide variety of combinations and arrangements of transmitting and absorbing materials that can be made. The absorbing material can be an integral part of a first component, a second component or in both components; or the absorbing material can be provided as a part of a separate component placed between the first and second component. One of ordinary skill in the art would have readily appreciated selecting which of the components or surfaces of the components to include the absorbent material so that the contacting area of the components is adequately heated so that a strong weld can be formed between the components.

One of ordinary skill in the art would have readily appreciated forming the honeycomb core of Fell using the well known method of thermoforming and folding a thermoplastic sheet as taught by Pflug in order to produce a honeycomb of an indefinite length, and selecting the desired arrangement of transparent and absorbent materials for the honeycomb core and facing sheets of Fell as taught by Savitski in order to adequately heat the contacting portions and forming a sufficiently strong weld.

7. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fell, Grosser, optionally Rinkewich, and further in view of Ducruy [FR2760999] and Savitski et al. [US6596122].

Fell discloses a method of making a sandwich structure. Applicant is referred to paragraph 5 for a detailed discussion of Fell as modified. Fell does not disclose producing the core by an extrusion process. While Grosser teaches applying a laser absorbent material in the contacting joint area between the components, the

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combination of Grosser and Fell do not explicitly disclose placing the absorbent materials at the claimed location of claim 13.

Ducruy discloses a method of making a honeycomb structure. Ducruy teaches a well known method of forming honeycomb cores by extrusion.

Savitski discloses a method of welding plastic parts. Savitski discloses it is known to use electromagnetic radiation, such as infrared or laser, to weld plastic components by transmitting the laser through one of the plastic components to the contacting area between the components to be joined, so that the contacting area between the components is heated and a weld is formed at the exposed contacting area. Savitski discloses forming the plastic components of a laser transparent material and using a laser absorbent material to heat desired locations. Savitski discloses there is a wide variety of combinations and arrangements of transmitting and absorbing materials that can be made. The absorbing material can be an integral part of a first component, a second component or in both components; or the absorbing material can be provided as a part of a separate component placed between the first and second component. One of ordinary skill in the art would have readily appreciated selecting which of the components or surfaces of the components to include the absorbent material so that the contacting area of the components is adequately heated so that a strong weld can be formed between the components.

One of ordinary skill in the art would have readily appreciated forming the honeycomb core of Fell using the well known method of extrusion processing as taught by Ducruy in order to produce a honeycomb of an indefinite length, and selecting the



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desired arrangement of transparent and absorbent materials for the honeycomb core and facing sheets of Fell as taught by Savitski in order to adequately heat the contacting portions and forming a sufficiently strong weld.

8. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fell, Grosser, optionally Rinkewich, and further in view of Lusignea et al. [US5443884].

Fell discloses a method of making a sandwich structure. Applicant is referred to paragraph 5 for a detailed discussion of Fell as modified. Fell is silent as to the facing sheets being uniaxially or biaxially orientated.

Lusignea discloses a composite structure. The structure comprises a honeycomb core formed of a plastic material, and face sheets on either side of the honeycomb core. The face sheets comprise a plastic material and are biaxially oriented. The use of biaxially oriented face sheets improves the strength and stiffness of the composite structure.

It would have been obvious to one of ordinary skill in the art at the time of invention to modify method of Fell by using biaxially oriented facing sheets as taught by Lusignea in order to improve the strength and stiffness of the honeycomb composite.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DANIEL MCNALLY whose telephone number is (571)272-2685. The examiner can normally be reached on Monday - Friday 8:00AM-4:30PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on (571) 272-1226. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Daniel McNally/  
Examiner, Art Unit 1791

/Jeff H. Aftergut/  
Primary Examiner, Art Unit 1791

/DPM/  
March 12, 2008